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| Endress+Hauser Flow USA, Inc. Greenwood, Indiana USA | October 6, 2022 |
| Mark Lovisa, Committee Chair  Southern Weights and Measures Association  Specifications & Tolerances Committee | |

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| Specifications & Tolerances Agenda Items - LPG-15, MFM-15, and Block 1 |
| Dear Mr. Lovisa,  **Recent status**  At the Southern Weights and Measures Association (SWMA) Annual Meeting held in October 2021, the S&T Committee heard comments and presented LPG-15.1 and MFM 15.1 to the Association for a vote. The items passed by unanimous vote to move forward for voting to the National Conference on Weights and Measures (NCWM). At the Central Weights and Measures Association (CWMA) Interim Meeting held in October 2021, the S&T Committee heard comments and recommended that LPG-15.1 and MFM 15.1 move forward for voting at the NCWM.  At the NCWM Interim Meeting held January 10, 2022, to avoid confusion with requirements for a fixed volume standard, I asked the NCWM S&T committee to revise the titles of LPG 15.1 and MFM 15.1 N.3.2 to Field Standard Meter Test. That revised language is before your committee in the SWMA S&T Agenda.  I exhibited a Coriolis mass flow meter that is used as a Field Standard Meter. I also provided a presentation on the topic of Field Standard Meters showing calibration methods, test data from gravimetric testing and captive displacement proving, test draft size, NTEP certification and examples of Field Standard Meters. The edited presentation is available on the NCWM website.  I would note that the NCWM January 2022 Interim Meeting, S&T Committee comments for items LPG 15.1 are found on your agenda page S&T 208 lines 27 through page S&T 209 line 10 and the MFM 15.1 are found on your agenda page S&T 217 line 23 through page S&T 218 line 9. However, there is an error on S&T 209 lines 11\_15 which attributes Ms. Tina Butcher as submitter of the item. Those are her comments regarding Block 8. The NCWM July 2022 Annual Meeting, S&T Committee comments for items LPG 15.1 and MFM-15 combined are found on your agenda page S&T 218 lines 10 through line 15  At the CWMA Annual Meeting held the week in May 2022, the S&T Committee heard from Mike Johnson with the State of Nebraska. He gave a presentation of the Field Standard Meters that the State uses. They have a three-inch meter mounted on a trailer and two one-inch meters. He commented about the ease use of the equipment and their ability to test multiple meters at one location in a very short time. Ivan Hankins provided a similar comment where he witnessed LPG meter testing which was completed in a very short time. The Association voted on LPG-15.1 and MFM 15.1. The items passed by unanimous vote to move forward for voting to the National Conference.  At the NCWM Annual meeting in July 2022, the S&T Committee took comments from me regarding the status of development of LPG 15.1 and MFM 15.1. I informed the committee of the recommendations from the Southern and Central associations. The NCWM S&T Committee provided no comments or recommendations to me and did not discuss these items in their work session.  After reviewing other Measuring Device Codes, I am now proposing to amend Handbook 44 LMD-23.1, VTM-23.1, and MLK-23.1. These items are identical to the LPG-15 and MFM-15 items that were voted and accepted at the SWMA and CWMA Annual Meetings. These items address the minimum test draft size when using field standard meters to evaluate Liquid Measuring Devices, Vehicle Tank Meters and Milk Meters. This language is similar to the descriptions of test drafts requirements in many of the Handbook 44 device code sections. The NCWM S&T Committee Chairman recommended that these three new items be presented as a singular block. These items are on your agenda as Block 1.  At the CWMA Interim Meeting held in August 2022, S&T Committee reviewed the previous decision of the Association to forward items LPG 15.1 and MFM 15.1 and also then recommended that Block 1 should move forward together with a voting status to the NCWM for adoption at the NCWM Annual Meeting in July 2023.  At the Western Weights and Measures Association (WWMA) Annual Meeting in Garden Grove California, the committee heard comments from the submitter, Bob Murnane from Seraphin and a NIST Associate. The Committee decided to recommend withdrawing agenda items LPG-15.1 and MFM- 15.1 and recommended that submitter work with the developers of Block 8.  **Benefits**  I introduced the LPG and MFM items to recognize Field Standard Meters and the comparative smaller draft size benefit when using them. My goal was to identify technology and aid the States. Some representatives from States, namely Minnesota, Ohio, Florida, New Mexico, and Kansas, have reported that having language in NIST Handbook 44 will enable them and registered service agents to use field standard meters. Without the language, they cannot enforce Handbook 44 if field standards are used. The language also directs the agent and regulators as to the proper draft size needed.  Testing milk and chemical meters is difficult when standards are not readily available. Some registered service agents use both provers and field standard meters deciding based on where they are testing. The availability of dedicated provers for milk and chemicals is not often easy to find. Scales are very difficult to use to test meters used to fill railcars. There are applications where testing is impractical.  Field Standard Meters provide accurate, reliable, and efficient means for State inspectors and recognized service agents to place into service and subsequently verify measuring systems. These Field Standard Meters meet the 1/3 performance requirement compared to the measuring systems that they are testing. As with any standard, these field standards will be provided with traceable calibration documentation. Maintenance and operational training will be provided as well.  The use of these meters can increase field inspection productivity with shorter set-up and operation time. These meters can be designed to be compact and easily transported. Specialized transportation trucks are not needed.  **Summary**  Regarding the 2022 SWMA Annual Meeting Specifications and Tolerances Agenda items:   1. Agenda item MFM-15.1 is now revised based upon input from Searphin Test Measure and comments heard at the Western Weights and Measures Association regarding the minimum measured quantity specified for the meter. (See Below) 2. Agenda items in Block 1: LMD-23.1, VTM-23.1, and MLK-23.1 are identical to the items LPG-15.1 which was accepted by the SWMA and CWMA by unanimous vote at the Annual Meetings in October 2021 and May 2022. 3. Agenda items in Block 1: LMD-23.1, VTM-23.1, and MLK-23.1 require no further development.   Please continue your support for NCWM voting status of items LPG 15.1, MFM 15.1. Please present the items LMD-23.1, VTM-23.1, and MLK-23.1 to the Southern Weights and Measures Association for adoption at the 2022 Annual Meeting to move forward for adoption at the NCWM 2023 Annual Meeting.  Thank you for your consideration.  Michael Keilty  Standards and Metrology Manager |

Below is shown in S&T agenda

LPG-15.1 N.3. Test Drafts.

**Source:**

Endress + Hauser Flowtec AG USA

**Purpose:**

Amend Handbook 44 to allow field standard meters to be used to test and place into service dispensers and delivery system flow meters and to provide test draft size guidance.

**Item Under Consideration:**

Amend Handbook 44, LPG and Anhydrous Ammonia Liquid-Measuring Devices as follows:

**N.3. Test Drafts.**

**N.3.1 Minimum Test -** Test drafts should be equal to at least the amount delivered by the device in 1 minute at its normal discharge rate.

(Amended 1982)

**N.3.2. Field Standard Meter Test. – The minimum quantity for any test draft shall be equal to or greater than the amount delivered in one minute at the flow rate being tested.**

**(Added 20XX)**

Below is revised from what is shown in S&T agenda

**MFM-15.1 N.3. Test Drafts.**

**Source:**

Endress + Hauser Flowtec AG USA

**Purpose:**

Amend Handbook 44 to allow field standard meters to be used to test and place into service dispensers and delivery system flow meters and to provide test draft size guidance.

**Item Under Consideration:**

Amend Handbook 44, Mass Flow Meters Code as follows:

**N.3. Test Drafts.**

**N.3.1 Minimum Test -** The minimum test shall be one test draft at the maximum flow rate of the installation and one test draft at the minimum flow rate. More tests may be performed at these or other flow rates. (See T.3. Repeatability.)

(Amended 1982 **and 20XX)**)

**N.3.2. Field Standard Meter Test. – The minimum quantity for any test draft shall be equal to or greater than the amount delivered in one minute at the flow rate being tested except for tests of the minimum measured quantity specified for the meter.**

**(Added 20XX)**